

# Advanced Joining of Materials

B R I G H A M   Y O U N G   U N I V E R S I T Y

## CENTER

The Center for Advanced Joining of Materials (CAJM) is developing enhancements and new technologies based on friction stir welding (FSW). FSW is a relatively new, innovative joining technology that is revolutionizing the way in which aluminum, copper and other materials are being joined. The objectives are to develop enhancements to this existing technology that will broaden the use of this process in new materials and applications, and to transfer these technologies to local, national and international companies.

## TECHNOLOGY

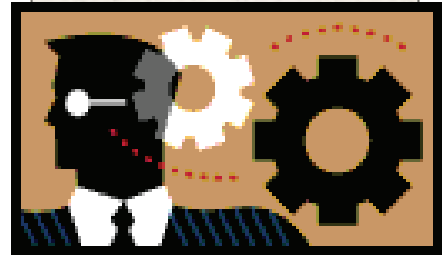
The Center has been focused on the development and marketing of three technological aspects of FSW: 1) tooling that will last longer, offer the ability to join a wider range of advanced materials, and enable better control of the resulting quality of the weld and its properties; 2) new control systems and hardware for large scale, three-dimensional FSW capabilities; and 3) new methods and novel tooling for joining polymeric materials.

## ACCOMPLISHMENTS

In this last year of funding, FSW rode a rising tide of interest to claim \$2.1 million in federal and industrial matching dollars, for a return of 23:1 on state dollars invested. During its tenure as a Center of Excellence, FSW has generated 11 pending and 2 issued patents. BYU issued an exclusive license for the patent on super abrasive tools to MegaStir, a spinout Utah company that already employs nearly 20 people, and granted additional licenses to the existing firm Advanced Metal Products. Interest from the pipeline, auto and shipbuilding markets is strong and growing, with major multinational customers already established. The Center continues development of the technology for additional materials on its own with federal and industrial funding.

## THINK TANK

What if there was...



**A new method for welding different metals that didn't melt the material, didn't add new material, and formed a joint that was base metal strong and nearly indistinguishable from the adjacent material?**

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